UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,352	06/25/2004	Yunjung Choi	51876P670	2632

7590 09/14/2010

Blakely Sokoloff Taylor & Zafman
12400 Wilshire Boulevard
Seventh Floor
Los Angeles, CA 90025

EXAMINER	
ROBERTS, JESSICA M	

ART UNIT	PAPER NUMBER
2621	

MAIL DATE	DELIVERY MODE
09/14/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/500,352	CHOI ET AL.	
	Examiner	Art Unit	
	JESSICA ROBERTS	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08/06/2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 August 2010* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date ____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/06/2010 has been entered.

Status of Claims

Claims 1-26 are currently pending in Application No. 10/500,352.

Response to Arguments

Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 15, 23, 24-25 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

3. Re claims 1 and 15 which recites "a receiving means for receiving the user display information, wherein the user display information corresponds to display capabilities of the display". The finds no support in the disclosure or specification for supporting "a receiving means for receiving the user display information, wherein the user display information corresponds to display capabilities of the display".

4. Re claims 2-14, and 16-22, fails to remedy the issue as stated above for claims 1 and 15. Thus, claims 2-14 and 16-22 are too rejected as failing to comply with the with written description requirement for depending upon claims 1 and 15.

5. Re claims 23, 24-26, which recites "receiving the user display information, wherein the user display information corresponds to display capabilities". The Examiner is unable to find support for "receiving the user display information, wherein the user display information corresponds to display capabilities".

Specification

6. The amendment filed 08/06/2010 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: fig. 2 element "Receiver".

Applicant is required to cancel the new matter in the reply to this Office Action.

Drawings

7. The drawings are objected to because Fig. 2 contains subject matter that is not supported by the disclosure. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1- 5, 11-14, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al., US-2002/0009137 and in view of Lipton et al., US-.5, 416, 510 and in further view of Oshima et al., US-6,574,423.

4. Regarding claim 1, Nelson teaches A stereoscopic video encoding apparatus that supports multi- display modes based on a-user display information, comprising an encoding means for right and left-eye images by encoding the fields separated in the field separating means by performing motion and disparity compensation (fig. 12), a receiving means (receiver, fig. 1 element 34) for receiving the user display information, where the user display information corresponds to display capabilities of the display (Nelson discloses where the in other embodiments the 3D video broadcasting system may also support production of non-standard video streams for tow-dimensional (2D) or 3D applications, [0030]. Further, the set-top receiver 36 preferably is implemented in a set top box, allowing viewers to view captured video images in 2D or 3D using SD television (SDTV) and/or HD television (HDTV), [0035], [0051] and fig. 1. Since, the receiver transmits the compressed 3D stream to the set-top box and the compressed

video stream, and the set top box is capable of allowing views to view captured video images in 2D or 3D, it is clear to the examiner that the receiver 34 transmits information to the set-top box (36) that indicates and corresponds to whether the display is capable of displaying 2D or 3D images); and a multiplexing means for multiplexing encoded streams for only the-essential fields among the encoded streams received from the encoding means, based on the user display information ([0044]); wherein the encoding means determines a field of sub-layer of right and left eye images based on disparity estimation of a main layer of the right and left-eye images and motion estimation of an enhancement layer of the main layer (Nelson discloses where to implement this type of bi-directional motion/disparity compensated coding, an enhancement encoding block 402 includes a disparity estimator 406 and a disparity compensator 408 to estimate and compensate for the disparity between the left and right views having the same field order for disparity based prediction. The disparity estimator 406 and the disparity compensator 408 preferably receive I-pictures and/or other reference images from the base stream encoder 410 for such prediction. The enhancement encoding block 402 preferably also includes an enhancement stream encoder 404 for receiving the right view video stream to perform motion based prediction and for encoding the right video stream to the enhancement stream using both the disparity based prediction and motion based prediction, [0134] and fig. 12. Therefore, it is clear to the Examiner that Nelson discloses that both the left and right video stream are encoded with the motion compensated DCT encoder as well as input into the disparity estimator, which reads upon the claimed limitation). Nelson is silent in regards to a field separating means for

separating right and left-eye input images into an odd field of the left-eye image (LO), even field of the left-eye image (LE), odd field of the right-eye image (RO), and even field of the right-eye image (RE); the four streams corresponding to a video to be output on a display of a user; and a second sub-layer with the fields separated in the field separating means, and such that only the essential fields necessary to display the video on the display of the user are multiplexed for transmittal to the display of the user, as claimed.

5. However, Lipton discloses a stereoscopic video signal format compatible with the NTSC protocol, with a 4-fold interlace with 262.25 lines/field, and rate of 120 fields per second (fig. 6A-6B). Lipton further discloses a controller is used to unsqueeze and demultiplex the signal before it is displayed on a monitor, the controller can organize the signal to produce a sequence of fields based on the display of a stereoscopic video image (column 10 line 7-21); the four streams corresponding to a video to be output on a display of a user(Lipton discloses where the invention is a method and apparatus for multiplexing and demultiplexing two channels of picture information within a standard video channel. The method is specifically designed for field sequential stereoscopic display column 5 line 40-44 and fig. 1C. Further, disclosed by Lipton is fig. 6A-6B where disclosed is a diagram representing a stereoscopic video signal format compatible with the NTSC protocol, with a 4-fold interlace with 262.25 lines/field, and a rate of 120 fields/second. Therefore, it is clear to the Examiner that Lipton discloses the left and right even and odd fields for stereoscopic display corresponds to a video to be displayed) such that only the essential fields necessary to display the video on the

display of the user are multiplexed for transmittal to the display of the user (Lipton discloses where the invention is a method and apparatus for multiplexing and demultiplexing two channels of picture information within a standard video channel. The method is specifically designed for field sequential stereoscopic display column 5 line 40-44 and fig. 1C. Further, disclosed by Lipton is fig. 6A-6B where disclosed is a diagram representing a stereoscopic video signal format compatible with the NTSC protocol, with a 4-fold interlace with 262.25 lines/field, and a rate of 120 fields/second. Therefore, it is clear to the Examiner that Lipton discloses to multiplex the right and left even and odd fields of the video, which reads upon the claimed limitation)

6. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Nelson with Lipton's teaches of four fold interlace signal for providing a stereoscopic signal that can be processed to produce flicker less, field-sequential electronic stereoscopic display with good image quality, (column 10 line 10-19).

7. Nelson (modified by Lipton) does not explicitly disclose to generating four streams for right and left eye images.

8. However Oshima teaches where a right-eye signal 97 and a left-eye signal 98 are entered in a recording device 99. Being of interlace signals, in every 1/60, odd field signals 72a, 72b and even field signals 73a, 73b are entered. The signals are combined in combining units 101a, 101b, and transformed into frame signals 102a, 102b, in every 1/30 second. Compressed signals 83a, 83b compressed in compressing units 103a, 103b, column 12 line 35-42 and fig. 23. Since Oshima teaches the right and

left eye signals are interleaved into even and odd fields and are compressed with compressing units, 103a, and 103b, it is clear to the examiner that Oshima teaches to generate even and odd fields of the video signal for the right and left eye and respectively encodes the video signals, which reads upon the claimed limitation.

9. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Oshima with Nelson (modified by Lipton) for providing a more cost effective signal processing of stereoscopic signals.

10. Regarding **claim 2**, Nelson (modified by Lipton and Oshima) as a whole teaches everything as claimed above, see claim 1. Nelson is silent in regards to The stereoscopic video encoding apparatus as recited in claim l, wherein the encoding means forms a main layer with the odd field of the left-eye image (LO) and the even field of the right-eye image (RE), a first sub-layer with the even field of the left-eye image (LE), and a second sub-layer with the odd field of the right-eye image (RO).

11. However, Lipton discloses the real time display field sequence and record output field sequence (fig. 24) which has 3 layers formed from the right even and left odd, right odd and left even, and right even and left odd, which exemplifies Lipton creating layers from different combinations of fields for the left and right eye.

12. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Nelson with Liptons' teaching of four fold interlace signal for providing a stereoscopic signal that can be processed to produce flickerless, field-sequential electronic stereoscopic display with good image quality (column 1 line 10-19).

13. Regarding **claim 3**, Nelson (modified by Lipton and Oshima) as a whole teaches everything as claimed above, see claim 1. In addition Nelson teaches The stereoscopic video encoding apparatus as recited in claim 2, wherein the encoding means ([0124] and fig.9) forms a base layer of the main layer with the odd field of the left-eye image (LO) and forms an enhancement layer of the main layer with the even field of the right-eye image (RE) (Nelson discloses the base stream may include information from left view images while the enhancement stream may include information from the right view images [0042], [0125], and fig. 9).The examiner notes that a left and right view would include the even and odd fields of the images) left and then performs encoding using estimation for motion and disparity compensation (Nelson, [0134] and fig. 12).

14. Regarding **claim 4**, Nelson (modified by Lipton and Oshima) as a whole teaches everything as claimed above, see claim 3. In addition, Nelson teaches the stereoscopic video encoding apparatus as recited in claim 3, wherein the first sub-layer performs the estimation for motion compensation based on the information related to the base layer, and performs the estimation for disparity compensation based on the information related to the enhancement layer ([0134] and fig. 12).

15. Regarding **claim 5**, Nelson (modified by Lipton and Oshima) as a whole teaches everything as claimed above, see claim 3. In addition, Nelson teaches the stereoscopic video encoding apparatus as recited in claim 3, wherein the second sub-layer performs the estimation for disparity compensation based on the information related to the base layer and the first sub-layer, and performs the estimation for motion compensation based on the information related to the enhancement layer. Nelson discloses the

enhancement encoding block 402 preferably also includes an enhancement stream encoder 404 for receiving the right view video stream to perform motion based prediction and for encoding the right video stream to the enhancement stream using both the disparity based prediction and motion based prediction ([0134]). Although Nelson is silent in regards to a second sub-layer, Lipton discloses where the record output field sequence contains more than one sub-layer (fig. 24).

16. The combination of Nelson and Lipton as a whole teaches the sub-layer performs estimation for disparity based on information related to the base layer and a sub-layer, and motion compensation from information relating to the enhancement layer.

17. Regarding **claim 11**, Nelson (modified by Lipton and Oshima) as a whole teaches everything as claimed above, see claim 1. In addition, Nelson teaches The stereoscopic video encoding apparatus as recited in claim 1, wherein the user display information includes a three-dimensional field shuttering display, a three- dimensional frame shuttering display, and a two-dimensional display ([0060], [0098], fig. 2 element 112 and fig. 6. Nelson further discloses the broadcasting system may also support production of non-standard video streams for two-dimensional (2D) or 3D application [0030]).

18. Regarding **claim 12**, Nelson (modified by Lipton and Oshima) as a whole teaches everything as claimed above, see claim 1. In addition, Nelson teaches the stereoscopic video encoding apparatus as recited in claim 1, wherein the multiplexing means multiplexes the odd field of the left-eye image (LO) and the even field of the right-eye image (RE), in case where the user display information indicates a three-

dimensional field shuttering display ([0060]). Nelson further teaches alternate left and right video fields preferably are presented to the viewer by means of actively shuttered glasses, which are synchronized with the alternate interlaced fields (or alternate frames) produced by standard televisions ([0030]).

19. Regarding **claim 13**, Nelson (modified by Lipton and Oshima) as a whole teaches everything as claimed above, see claim 1. Nelson is silent in regards to the stereoscopic video encoding apparatus as recited in claim 1, wherein the multiplexing means multiplexes the odd field of the left-eye image (LO), the even field of the left-eye image (LE), the odd field of the right-eye image (RO), and the even field of the right-eye image (RE), in case where the user display information indicates a three-dimensional frame shuttering display.

20. However Lipton discloses representing a stereoscopic video signal format compatible with the NTSC protocol, with a 4-fold interlace with 262.25 lines/field, and a rate of 120 fields/sec (fig. 6A). Further, Lipton discloses the present invention is independent of the particular selection technique employed, and will work with any properly engineered individual shuttering device, column 12 line 4-23, which reads upon the claimed invention.

21. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Nelson with Liptons' teaching of four fold interlace signal for providing a stereoscopic signal that can be processed to produce flickerless, field-sequential electronic stereoscopic display with good image quality (column 1 line 10-19).The combination of Nelson and Lipton are silent in regards

to explicitly teaching the multiplexing means multiplexes the odd field of the left-eye image (LO), the even field of the left-eye image (LE), the odd field of the right-eye image (RO), and the even field of the right-eye image (RE). However, Oshima teaches multiplexing the left field (even and odd) and the right field (even and odd), fig. 23).

22. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Oshimas' teachings of multiplexing the left even and odd field and the right even and odd fields with Nelson (modified by Lipton) for providing a more cost effective signal processing of stereoscopic signals.

23. Regarding **claim 14,** Nelson (modified by Lipton and Oshima) as a whole teaches everything as claimed above, see claim 1. In addition, Nelson teaches The stereoscopic video encoding apparatus as recited in claim 1, wherein the multiplexing means multiplexes the odd field of the left-eye image (LO), and even field of the left-eye image (LE), in case where the user display information indicates a two-dimensional display ([0030] therefore, it is clear to the examiner that only the field of one eye (left or right) would need to be multiplexed, since the image or picture is flat or lacking depth).

24. Regarding **claim 23**, which recite a corresponding method to the encoding apparatus of claims 1-14. Thus the rejection and analysis made in claims 1-14 also apply here because the apparatus would have necessarily performed the method steps in claim 23.

25. Regarding **claim 25**, the analysis and rejection made in claims 1-14 also apply here. Nelson (modified by Lipton and Oshima) as a whole teaches a microprocessor

based system. Hence a computer processor for executing the necessary steps corresponding to the apparatus of claims 1-14 would have been inherent.

26. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al., US-2002/0009137 and in view of Lipton et al., US-.5, 416, 510 and Oshima et al., US-6,574,423 and further view of Wu et al., US-6,614, 936.

27. Regarding **claim 6**, Nelson (modified by Lipton and Oshima) as a whole teaches everything as claimed above, see claim 1. In addition, Nelson teaches The stereoscopic video encoding apparatus as recited in claim 1, wherein the encoding means forms a main layer with the odd field of the left-eye image (LO), a first sub-layer with the even field of the fight-eye image (RE) ([0042] and [0125]). Nelson is silent in regards to a second sub-layer with the even field of the left-eye image (LE), and a third sub-layer with the odd field of the right-eye image (RO).

28. However, Lipton discloses the real time display field sequence and record output field sequence (fig. 24) which has 3 layers formed from the right even and left odd, right odd and left even, and right even and left odd, which exemplifies Lipton creating layers from different combinations of fields for the left and right eye.

29. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Nelson with Liptons' teaching of the real time display and record output field sequence to minimize record buffer size and leads to a more cost effective implementation (column 26 line 20-24).

30. Nelson (modified by Lipton) is silent in regards to a third sub-layer, however, Wu teaches multiple enhancement layers (fig. 4 and 5).

31. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Wus' teaching of multiple enhancement layers with Nelson (modified by Lipton and Oshima) for providing a coding scheme that where the difference between any two layers, even if small, can be used by the decoder to improve the image quality (column 5 line 33-42).

32. Regarding **claim 7**, Nelson (modified by Lipton and Oshima and Wu) as whole everything as claimed above, see claim 6. In addition, Nelson teaches the stereoscopic video encoding apparatus as recited in claim 6, wherein the main layer performs the estimation for motion compensation based on the information related to the main layer (fig. 12 element 410).

33. Regarding **claim 8**, Nelson (modified by Lipton, Oshima and Wu) as a whole teaches everything as claimed above, see claim 6.The stereoscopic video encoding apparatus as recited in claim 6, wherein the first sub-layer performs the estimation for motion compensation based on the information related to the first sub-layer, and performs the estimation for disparity compensation based on the information related to the main layer (Nelson teaches performing estimation for motion compensation based on the sub-layer (enhancement layer) and performing estimation for disparity compensation from information relating to the main (base) layer ([0134] and fig. 12).

34. Regarding **claim 9**, Nelson (modified by Lipton, Oshima and Wu) as a whole teaches everything as claimed above, see claim 6. In addition, Nelson teaches The stereoscopic video encoding apparatus as recited in claim 6, wherein the second sub-layer performs the estimation for motion compensation based on the information related

to the main layer and the second sub-layer (Nelson teaches where the enhancement layer performs estimation for motion compensation ([0134] and fig. 12). Nelson is silent in regards to a second sub-layer, however, Wu teaches multiple enhancement layers (fig. 4 and 5). The combination of Nelson, Lipton and Wu as a whole teaches performing estimation for motion compensation for a second sub-layer. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Wus' multiple enhancement layers with Nelson (modified by Lipton and Oshima) for providing a coding scheme that where the difference between any two layers, even if small, can be used by the decoder to improve the image quality (column 5 line 33-42).

35. Regarding **claim 10**, Nelson (modified by Lipton, Oshima, and Wu) as a whole teaches everything as claimed above, see claim 6. In addition, Nelson teaches the stereoscopic video encoding apparatus as recited in claim 6, wherein the third sub-layer performs the estimation for motion compensation based on the information related to the first sub-layer, and performs the estimation for disparity compensation based on the information related to the main layer and the second sub-layer. Nelson teaches performing estimation for motion compensation based on the sub-layer and the second sub-layer (enhancement layer) and performing estimation for disparity compensation from information relating to the main (base) layer ([0134] and fig. 12). Nelson discloses the enhancement encoding block 402 preferably also include4s an enhancement stream encoder 404 for receiving the right view video stream to perform motion based prediction and for encoding the right video stream to the enhancement stream using both the disparity based prediction and motion based prediction ([0134]). Although

Nelson is silent in regards to a second sub-layer, Lipton discloses where the record output field sequence contains more than one sub-layer (fig. 24).

36. Nelson (modified by Lipton) as a whole teaches the sub-layer performs estimation for disparity based on information relating to the main layer and a sub-layer, which reads upon the claimed limitation.

37. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Lipton with Nelson for providing a stereoscopic signal that can be processed to produce flickerless, field-sequential electronic stereoscopic display with good image quality (column 1 line 10-19).

38. Nelson (modified by Lipton) is silent in regards to a third sub-layer, however Wu teaches a multiple enhancement layers (fig. 4 and 5). The combination of Nelson, Lipton and Wu as a whole teaches a performing estimation for disparity compensation and motion compensation for information relating to the base layer from the third sub-layer.

39. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Wus' teaching of multiple enhancement layers with Nelson (modified by Lipton and Oshima) for providing a coding scheme that where the difference between any two layers, even if small, can be used by the decoder to improve the image quality (column 5 line 33-42).

40. Claims 15, 19, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al., US-2002/0009137 and in view of Oshima et al., US-6,574,423.

41. Regarding **claim 15,** Nelson teaches A stereoscopic video decoding apparatus that supports multi-display modes based on a user display information, comprising: an inverse-multiplexing means for inverse-multiplexing supplied bit stream into multiple encoded streams corresponding to essential fields among encoded streams to be suitable for the user display information (fig. 12: 414), a decoding means for decoding the multiple encoded streams inverse-multiplexed in the inverse-multiplexing means by performing estimation for motion and disparity compensation (fig. 12:418, 420, 422); and a display means for displaying an image decoded in the decoding means based on the user display information ([0054] and fig. 1:46); and a receiving means (receiver, fig. 1 element 34-36) for receiving the user display information, where the user display information corresponds to display capabilities of the display (Nelson discloses where the in other embodiments the 3D video broadcasting system may also support production of non-standard video streams for tow-dimensional (2D) or 3D applications, [0030]. Further, the set-top receiver 36 preferably is implemented in a set top box, allowing viewers to view captured video images in 2D or 3D using SD television (SDTV) and/or HD television (HDTV), [0035], [0051] and fig. 1. Since, the receiver transmits the compressed 3D stream to the set-top box and the compressed video stream, and the set top box is capable of allowing views to view captured video images in 2D or 3D, it is clear to the examiner that the receiver 34 transmits information to the set-top box (36) that indicates and corresponds to whether the display is capable of displaying 2D or 3D images); wherein the supplied bit stream includes a field of sub-layer of encoded streams that is based on the disparity estimation of a main layer of the encoded streams

and motion estimation of an enhancement layer of the main layer (The base stream and the enhancement stream preferably are then multiplexed by a multiplexed by a multiplexer 412 at the transmission end and demultiplexed by a demultiplexer 414 at the receiver end. The demuliplexer base stream preferably is provided to a base stream decoder 422 to re-generate the left view video stream. The demultiplexed enhancement stream preferably is provided to an enhancement stream decoding block 416 to re-generate the right view disparity compensator 420 for disparity based compensation. The disparity compensator 420 preferably receives I-pictures and/or other references images from the base stream decoder 422 for decoding based on disparity between right and left views [0135] and fig. 12. Therefore, it is clear to the Examiner that Nelson discloses that both the left and right video streams are encoded with the motion compensated DCT encoder as well as input into the disparity estimator are received on the decoding side of the motion/disparity compensated coding and decoding system, which reads upon the claimed limitation.

42. Nelson is silent in regards to four encoded streams, wherein the bit stream is comprised of only the essential fields necessary to display the video on a display of a user.

43. However Oshima teaches where a right-eye signal 97 and a left-eye signal 98 are entered in a recording device 99. Being of interlace signals, in every 1/60, odd field signals 72a, 72b and even field signals 73a, 73b are entered. The signals are combined in combining units 101a, 101b, and transformed into frame signals 102a, 102b, in every 1/30 second. Compressed signals 83a, 83b compressed in compressing

units 103a, 103b, column 12 line 35-42 and fig. 23. Since Oshima teaches the right and left eye signals are interleaved into even and odd fields and are compressed with compressing units, 103a, and 103b, it is clear to the examiner that Oshima teaches to generate encoded even and odd fields of the video signal for the right and left eye and respectively; wherein the bit stream is comprised of only the essential fields necessary to display the video on a display of a user (teaches where a right-eye signal 97 and a left-eye signal 98 are entered in a recording device 99. Being of interlace signals, in every 1/60, odd field signals 72a, 72b and even field signals 73a, 73b are entered. The signals are combined in combining units 101a, 101b, and transformed into frame signals 102a, 102b, in every 1/30 second. Compressed signals 83a, 83b compressed in compressing units 103a, 103b, column 12 line 35-42 and fig. 23. Since Oshima teaches the right and left eye signals are interleaved into even and odd fields and are compressed with compressing units, 103a, and 103b, it is clear to the examiner that Oshima teaches to the bit stream is contains the right and left even and odd fields, which reads upon the claimed limitation).

44. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Oshima with Nelson providing a more cost effective signal processing of stereoscopic signals.

45. The Nelson decoding apparatus, now incorporating the encoded even and odd fields for the right and left eye, has all of the features of claim 15.

46. Regarding **claim 19**, Nelson (modified by Oshima) as a whole teaches everything as claimed above, see claim 15. In addition, Nelson teaches The

stereoscopic video decoding apparatus as recited in claim 15, wherein the inverse-multiplexing means inverse-multiplexes the bit stream into the odd field of the left-eye image (LO), and even field of the left-eye image (LE), in case where the user display information indicates a two-dimensional display (2D) applications ([0030]), Further, Nelson discloses when the set-top box is used by the viewer is not equipped to decoded the enhancement stream he or she is still capable of watching the 3D stream in 2D on the display monitor [0051] and fig. 1. Therefore, it is clear to the examiner that only the field of one eye (left or right) would need to be demultiplexed, since the image or picture is flat or lacking depth).

47. Regarding **claim 22**, Nelson (modified by Oshima) as a whole teaches everything as claimed above, see claim 15. In addition, Nelson teaches The stereoscopic video decoding apparatus as recited in claim 15, wherein the display means displays an image that is decoded from the odd field of the left-eye image (LO), and an image decoded from the even field of the left-eye image (LE) simultaneously, in case where the user display information indicates a two-dimensional display (The broadcast system as disclosed by Nelson supports production of two dimensional (2D) applications ([0030]), therefore it is clear to the examiner that only the field of one eye (left or right) would need to be decoded together in order to produce a flat image or an image that lacks depth).

48. Regarding **claim 24**, which recite a corresponding method of the decoding apparatus of claims 15-22. Thus the rejection and analysis made in claims 15-22 also

apply here because the apparatus would have necessarily performed the method steps in claim 24.

49. Claims 16-18, 20-21, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al., US-2002/0009137 in view of Oshima et al., US-6,574,423 and further in view of Lipton et al.,US-5,416,510.

50. Regarding **claim 16,** Nelson (modified by Oshima) as a whole teaches everything as claimed above, see claim 15. In addition, Nelson teaches The stereoscopic video decoding apparatus as recited in claim 15, wherein the user display information includes a three-dimensional field shuttering display ([0060], [0098], fig.2: 112 and fig. 6), and a two-dimensional display (Nelson discloses the 3D broadcasting system may also support production of non-standard video streams for two dimensional applications [0030]). Nelson is silent in regards to a three-dimensional frame shuttering display.

51. However, Lipton discloses the present invention is independent of the particular selection technique employed, and will work with any properly engineered individual shuttering device, column 12 line 4-23, which reads upon the claimed invention).

52. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Lipton with Nelson (modified by Oshima) for providing a stereoscopic signal that can be processed to produce flickerless, field-sequential electronic stereoscopic display with good image quality (column 1 line 10-19).

53. Regarding **claim 17**, Nelson (modified by Oshima) as a whole teaches everything as claimed above, see claim 15. Nelson is silent in regards The stereoscopic video decoding apparatus as recited in claim 15, wherein the inverse-multiplexing means inverse-multiplexes the bit stream into the odd field of the left-eye image (LO) and the even field of the fight-eye image (RE), in case where the user display information indicates a three-dimensional field shuttering display.

54. However, Lipton teaches the inverse multiplexing means inverse-multiplexes the bit stream into the odd field of the left eye image (LO) and the even field of the right-eye image (RE), (column 15 line 43-52).

55. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Liptons with Nelson (modified by Oshima) for providing a stereoscopic signal that can be processed to produce flickerless, field-sequential electronic stereoscopic display with good image quality (column 1 line 10-19).

56. Regarding **claim 18**, Nelson (modified by Oshima) as a whole teaches everything as claimed above, see claim 15. Nelson is silent in regards to The stereoscopic video decoding apparatus as recited in claim 15, wherein the inverse-multiplexing means inverse-multiplexes the bit stream into the odd field of the left-eye image (LO), even field of the left-eye image (LE), odd field of the right-eye image (RO), and the even field of the right-eye image (RE), in case where the user display mode reformation indicates a three-dimensional frame shuttering display. However, Lipton discloses demultiplexing the signal into a four-field sequence (left odd, right odd, left

even, right even) column 10 line 7-21 and fig. 6A. Lipton further discloses where the display field sequence contains right even, left odd, right odd, left even...etc. fig. 24, and where the present invention is independent of the particular selection technique employed, and will work with any properly engineered individual shuttering device, column 12 line 4-23, which reads upon the claimed invention).

57. Nelson (modified by Oshima and Lipton) as a whole discloses the claimed invention except for the field order of the bit stream is LO, LE, RO, and RE. It would have been an obvious matter of design choice to order field sequence of the image being generated to LO, LE, RO, and RE since applicant has not disclosed that the sequence of LO, LE, RO, and RE solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with displaying the pictures from images decoded the RE, LO, RO, and LE sequence.

58. Regarding **claim 20**, Nelson (modified by Oshima) as a whole teaches everything as claimed above, see claim 15. Nelson is silent in regards to The stereoscopic video decoding apparatus as recited in claim 15, wherein the display means displays an image that is decoded from the odd field of the left-eye image (LO), and an image that is decoded from the even field of the right-eye image (RE) at predetermined time intervals, in case where the user display information indicates a three- dimensional field shuttering display.

59. However, Lipton discloses the relative timing sequence of the record output field sequence which contains an even sequence generated from a right even and left odd (fig. 24). Lipton further teaches the images are displayed at 1/120 sec per from (fig. 6A).

Lipton discloses where the present invention will work with any properly engineered individual shutter selection device (column 12 line 4-23).

60. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Lipton with Nelson (modified by Oshima) for providing a stereoscopic signal that can be processed to produce flickerless, field-sequential electronic stereoscopic display with good image quality (column 1 line 10-19).

61. Regarding **claim 21**, Nelson (modified by Oshima) as a whole teaches everything as claimed above, see claim 15. Nelson is silent in regards to The stereoscopic video decoding apparatus as recited in claim 15, wherein the display means displays an image that is decoded from the odd field of the left-eye image (LO), an image decoded from the even field of the left-eye image(LE), an image decoded from the odd field of the right-eye image (RO), and an image decoded from the even field of the right-eye image (RE) at predetermined time intervals, in case where the user display mode information indicates a three-dimensional frame shuttering display.

62. However, Lipton discloses the output field sequence is generated from RE, Lo, RO, and LE fields (fig. 24). Lipton also discloses wherein the four field display is in field sequential format and has a display of 1/120s (fig. 6A). Lipton discloses the present invention is independent of the particular selection technique employed, and will work with any properly engineered individual shuttering device, column 12 line 4-23, which reads upon the claimed invention).

63. The combination of Nelson (modified by Oshima and Lipton) as a whole have the majority of the features of claim 21, but still fails to discloses the display means displays an image decoded from the odd field of the left eye, an image decoded from the even field of the left eye, and image decoded from the odd field of the right eye, and an image decoded form even field of the right eye.

64. It would have been an obvious matter of design choice to order the image being generated in the sequence of LO, LE, RO, and RE since applicant has not disclosed that the sequence of LO, LE, RO, and RE solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with displaying the pictures from images decoded RE, LO, RO, and RE.

65. Regarding **claim 26**, the analysis made in claims 15-22 also apply here. Nelson (modified by Oshima and Lipton) as a whole teach a microprocessor based system. Hence a microprocessor for executing the necessary steps corresponding to the apparatus of claims 15-22 would be inherent.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JESSICA ROBERTS whose telephone number is (571)270-1821. The examiner can normally be reached on 7:30-5:00 EST Monday-Friday, Alt Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272-7905. The fax

phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/

Supervisory Patent Examiner, Art Unit 2621

/Jessica Roberts/
Examiner, Art Unit 2621